The prescribing, inpatient, outpatient and social care costs associated with atrial fibrillation in Scotland

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Introduction

Atrial Fibrillation (AF) is the most common form of arrhythmia affecting 1.8% of the adult Scottish population and rising to 6% in individuals aged over 65 years. Atrial Fibrillation (AF) is often linked to stroke, and incurs significant clinical and economic burden to both the patient and the NHS. Oral anticoagulants (OAC) are commonly prescribed for AF patients for the prevention of stroke.

Objective

Previous studies have estimated the cost of hospitalisations associated with AF. This study seeks to estimate prescribing, inpatient, outpatient and social care costs associated with AF in a Scottish cohort, by using individual-level linked data.

Methods

- A cohort of patients 50 years and older, hospitalised with a known diagnosis of AF or atrial flutter between 1997 and 2014, was followed up for five years following the first AF event.
- Individual-level data on hospitalisation and discharge to social care home were obtained from the Scottish Morbidity Records (SMR01); these were linked to outpatient data (SMR00), prescribing data (Scottish Prescription Information System; PIS) and death records.
- Prescription costs were identified from PIS, a Scottish database including the prescribing for all medicines (and associated costs) prescribed and dispensed by: community pharmacies, dispensing doctors and a small number of appliance suppliers.
- Hospital costs were estimated utilising the Scottish National Tariff (SNT), a list of standard average prices based on Health Resource Groups (HRGs).
- Outpatient costs were estimated using unit costs per outpatient clinic attended.
- Social care costs were identified from the Care Home Census.
- A two-part Generalised Linear Model (GLM) was estimated adjusting for demographic characteristics, socio-economic status, year of admission, location and comorbidities. The first part estimated the probability of utilising any health care service in a particular year using a binomial distribution and a probit link. The second part estimated costs conditional on positive utilisation using a gamma distribution and a log link.
- The interaction of age with comorbidities and death with socio-economic status was included in the econometric model.

Results

- Overall, a cohort of 253,963 AF patients accounted for 2,988,607 hospital admissions and 4,452,476 outpatient attendances.
- Figure 1: Females incur higher costs in total than males (8.1%). Care home costs is the main driver, where females incur costs that are twice that of males.
- Figure 2: The mean cost per patient was estimated to be £3,874 (95% CI 3,855; 3,892). Hospital is the main cost driver, care home costs increase significantly with age. Overall, hospital admissions and outpatient visits accounted for 76.6% and 5.4% of the total cost, respectively; social care and prescriptions accounted for 13.6% and 3.9% of the total. The youngest patients incur the highest estimated total costs. Patients 90 years incurred significantly lower costs than those in younger age groups. For these patients, a significant reduction of hospital costs alongside an increase in social care costs was observed.
- Figure 3: Overall, patients with multi-comorbidities incurred 26.5% and 44.5% higher total costs then those with one comorbidity or no comorbidities. For each group, the contribution of each setting to the total cost remained unchanged.

Conclusions

This study has shown the importance of taking into account healthcare resource use incurred beyond hospitalisation, and will form part of a wider economic evaluation of non-vitamin K antagonist oral anticoagulants (NOACs) for the management of AF.

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